1. A plating cell comprising:

    a workpiece holder,

    an anode,

    a plurality of eductors for directing an electrolyte solution into the plating cell, and

    a solution flow dampening member,

    wherein the eductors, the dampening member and the workpiece are arranged such that electrolyte solution ejected from the eductors is directed by the dampening member to flow across the surface of the workpiece.

2. The plating cell of claim 1, wherein the workpiece is selected from the group consisting of a printed circuit board, printed wiring board, high density interconnect printed circuit board, high density interconnect printed wiring board, wafer level package, and chip scale package.

3. The plating cell of claim 1, further comprising a vibrator for the workpiece.

4. The plating cell of claim 3, further comprising an oscillator for the workpiece.

5. The plating cell of claim 1, further comprising an oscillator for the workpiece.

6. The plating cell of claim 1, wherein the electrolyte solution contains metal ions selected from the group consisting of copper ions, gold ions, nickel ions, tin ions, and the metal ions derived from lead-tin solder.

7. The plating cell of claim 1, wherein the distance between the anode and the workpiece is about 165 to about 300 mm.

8. The plating cell of claim 7, wherein the distance between the anode and the workpiece is about 210 to about 250 mm.

9. The plating cell of claim 8, wherein the distance between the anode and the workpiece is about 210 to about 220 mm.

10. The plating cell of claim 1, wherein the dimensions of the workpiece range from about 150 mm by about 150 mm to about 5 meters by about 5 meters.

11. The plating cell of claim 1, wherein the dimensions of the workpiece are about 200 mm to about 300 mm diameter.

12. The plating cell of claim 1, wherein the dampening member is a shaped guide.

13. The plating cell of claim 12 wherein the shaped guide is a member having a curved surface.

14. The plating cell of claim 13 wherein the shaped guide has a radius of curvature of about 6 to 12 inches.

15. The plating cell of claim 12 wherein the shaped guide is a member having an inclined planar surface.

16. The plating cell of claim 1, wherein the anode is housed in an anode chamber and the anode chamber contains a porous cloth.

17. The plating cell of claim 16, wherein the porous cloth is interposed between the anode and the workpiece such that the ionic current flow between the anode and the workpiece passes through the porous fiber cloth.

18. The plating cell of claim 16, wherein the anode chamber contains a baffle.

19. The plating cell of claim 16, wherein the anode chamber contains a non-conducting shield.

20. The plating cell of claim 16, wherein the anode chamber contains a non-conducting shield.

21. A method for electrodepositing a metal on a workpiece, the workpiece serving as a cathode in a plating cell, the plating cell containing an anode, an eductor, a solution flow dampening member and an electrolyte solution, the electrolyte solution containing metal ions, comprising:

> passing the electrolyte solution from an eductor over a solution flow dampening member to produce a solution flow over a surface of the workpiece, and
> passing an electric current between the anode and the cathode whereby the metal ions in the electrolyte solution are deposited on the workpiece.

22. The method of claim 21, wherein the workpiece is selected from the group consisting of a printed circuit board, printed wiring board, high density interconnect printed circuit board, high density interconnect printed wiring board, wafer level package, and chip scale package.

23. The method of claim 21, wherein the cell includes a vibrator for the workpiece.

24. The method of claim 23, wherein the cell includes an oscillator for the workpiece.

25. The method of claim 21, wherein the cell includes an oscillator for the workpiece.

26. The method of claim 21, wherein the metal ions are selected from the group consisting of copper ions, gold ions, nickel ions, tin ions, and the metal ions derived from lead-tin solder.

27. The method of claim 21, wherein the distance between the anode and the workpiece is about 165 to about 300 mm.

28. The method of claim 27, wherein the distance between the anode and the workpiece is about 210 to about 250 mm.

29. The method of claim 28, wherein the distance between the anode and the workpiece is about 210 to about 220 mm.

30. The method of claim 29, wherein the dimensions of the workpiece range from about 150 mm by about 150 mm to about 5 meters by about 5 meters.

31. The method of claim 30, wherein the dimensions of the workpiece are about 200 mm to about 300 mm diameter.

32. The method of claim 21, wherein the solution flow dampening member is a shaped guide.

33. The method of claim 32 wherein the shaped guide is a member having a curved surface.

34. The method of claim 33 wherein the shaped guide has a radius of curvature of about 6 to 12 inches.

35. The method of claim 32 wherein the shaped guide is a member having a flat surface.

36. The method of claim 21 wherein the anode is housed in an anode chamber and the anode chamber contains a porous cloth.

37. The method of claim 36, wherein the porous cloth is located such that the ionic current flow between the anode and the workpiece must pass through the porous cloth.

38. The method of claim 36, wherein the anode chamber contains a baffle.

39. The method of claim 38, wherein the anode chamber contains a non-conducting shield.

40. The method of claim 36, wherein the anode chamber contains a non-conducting shield.

41. The plating cell of claim 1, wherein the cell provides metal deposition across the workpiece having a coefficient of variability less than about 10%.

42. The plating cell of claim 41, wherein the coefficient of variability is less than about 7%.

43. The plating cell of claim 42, wherein the coefficient of variability is less than about 5%.

44. The method of claim 21, wherein the metal deposition across the workpiece has a coefficient of variability less than about 10%.

45. The method of claim 44, wherein the coefficient of variability is less than about 7%.

46. The method of claim 45, wherein the coefficient of variability is less than about 5%.